

Overview of Heatshield for Extreme Entry Environment Technology (HEEET) Engineering Test Unit (ETU) Manufacturing and Integration

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Abstract

The Heatshield for Extreme Entry Environment Technology (HEEET) projects objective is to mature a 3-D Woven Thermal Protection System (TPS) to Technical Readiness Level (TRL) 6 to support future NASA missions to destinations such as Venus and Saturn. A key aspect of the project has been the development of the manufacturing and integration processes/procedures necessary to build a heat shield utilizing the HEEET 3D-woven material. This has culminated in the building of a 1meter diameter Engineering Test Unit (ETU) representative of what would be used for a Saturn probe. This presentation will provide an overview of the manufacturing and integration processes utilized to build the ETU, with a focus on the seam design. The seam design represented the most challenging aspect of the HEEET development, given the aerothermal and structural requirements it needs to meet.